



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,548	07/01/2004	Luzhou Xu	CN 020001	5116
84274	7590	01/27/2010		
Docket Clerk P.O. Box 802432 Dallas, TX 75380			EXAMINER FLORES, LEON	
			ART UNIT 2611	PAPER NUMBER
			NOTIFICATION DATE 01/27/2010	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@munckcarter.com
munckcarter@gmail.com

Office Action Summary

Application No.

10/500,548

Applicant(s)

XU ET AL.

Examiner

LEON FLORES

Art Unit

2611

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 2-5, 8 and 12-14 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 6, 7 and 15 is/are allowed.
- 6) ☒ Claim(s) 9-11, 16, 17, 20-24, 27 and 28 is/are rejected.
- 7) ☒ Claim(s) 18, 19, 25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims (1, 6-7, 9-11, 16-28) have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claim 22 is objected to because of the following informalities:
3. In claim 22, it is not clear what applicant is trying to convey with the limitation of "at least one finger further comprises a plurality of delay paths". One skilled in the art would know that in a Rake receiver each finger corresponds to a particular delay path. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim (9-11, 16, 20-22, 23, 27-28) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al (hereinafter Sih)(US Patent 6,608,858 B1) in view of Prysby et al (hereinafter Prysby) (US Patent 6,888,878 B2), and further in view of Pajukoski. (US Patent 6,580,772 B2)

Re claim 9, Sih discloses a system comprising at least one portable unit and at least one network unit for radio communication, with at least one unit comprising at least one rake receiver for receiving information symbols comprising at least two fingers (In Fig. 7: 700A & B), and a combiner (710) coupled to said fingers.

But the reference of Sih fails to explicitly teach that wherein each of the at least two fingers comprises a finger compensator that compensates for frequency shift at the symbol level.

However, Prysby does. (See fig. 1: 101 & 103) Prysby discloses a plurality of RAKE fingers that provide time and phase compensation at the symbol level. Furthermore, one skilled in the art would know that frequency is related to the phase. And to prove that frequency & phase are related to each other, the examiner is providing evidence in which frequency is, in deed, related to phase. **(See US Patent 6,278,725 B1)** Equation 5 clearly shows that the change in frequency is directly proportional to how the phase changes with respect to time. It is clear from equation 5 that if the change in phase of the received signal is corrected, in other words we make the derivative of the phase equal to zero, then the left hand side, which is the frequency drift, of equation 5 will be equal to zero. And there won't be any frequency drifts. The reference of Prysby does teach compensating for phase errors at the symbol level,

whereby suggesting that the frequency drifts will also be corrected based on equation 5 above.

Therefore, taking the combined teachings of Sih and Prysby as a whole, it would have been obvious to one of ordinary skills in the art to incorporate this feature into the system of Sih, in the manner as claimed and as taught by Prysby, for the benefit of compensating for the channel impairments.

The combination of Sih & Prysby discloses the limitations as claimed above, except they fail to teach that wherein at least one finger comprises an averaging unit coupled between at least two arithmetical modules.

However, Pajukoski does. (See fig. 3: 314, 364, 376, 382 & fig. 8) Pajukoski discloses that wherein at least one finger comprises an averaging unit (364 col. 4, lines 63-65) coupled between at least two arithmetical modules.

Therefore, taking the combined teachings of Sih, Prysby, and Pajukoski as a whole, it would have obvious to one of ordinary skill in the art to incorporate this feature as claimed in the system of Sih, as modified by Prysby, for the benefit of compensating for channel distortion in a Rake receiver.

Claim 10 has been analyzed and rejected w/r to claim 9 above. Furthermore, the combination of Sih, Prysby & Pajukoski pertains to a CDMA communication system comprising base stations and mobile stations.

Claim 11 has been analyzed and rejected w/r to claim 9 above. Furthermore, the combination of Sih, Prysby & Pajukoski pertains to a CDMA communication system comprising base stations and mobile stations.

Re claim 16, the combination of Sih, Prysby, and Pajukoski further discloses that wherein said finger compensator comprises a filter and an amplitude normalizer coupled serially for receiving an input symbol signal and for generating all output symbol signal. (In Pajukoski, see col. 4, lines 4-14)

Re Claim 20, the combination of Sih, Prysby, and Pajukoski further discloses that most fingers each comprise a finger compensator, with all finger compensators together forming said compensator. (In Sih, see fig. 7)

Re Claim 21, the combination of Sih, Prysby, and Pajukoski further discloses that said rake receiver comprises a mixer for converting intermediate frequency signals into baseband signals, which mixer comprises an oscillator input coupled to a stable oscillator (In Sih, fig. 2, where a mixer 112 and an oscillator 220 are disclosed for converting IF signals to baseband signals).

Re claim 22, the combination of Sih, Prysby, and Pajukoski further discloses that wherein said at least one finger further comprises a plurality of delay paths. (In Sih, see

fig. 7: 700A, B, N. Furthermore, it is well known in the art that each finger correspond to a particular delay path.)

Claim 23 has been analyzed and rejected w/r to claim 16 above.

Claim 27 has been analyzed and rejected w/r to claim 20 above.

Claim 28 has been analyzed and rejected w/r to claim 21 above.

Claims (17, 24) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al (hereinafter Sih)(US Patent 6,608,858 B1), Prysby et al (hereinafter Prysby) (US Patent 6,888,878 B2) and Pajukoski (US Patent 6,580,772 B2), as applied to claims 9-11 above, and further in view of Sendonaris et al.(hereinafter Sendonaris) (US Patent 6,947,475 B2)

Re claim 17, the combination of Sih, Prysby, and Pajukoski further discloses that wherein said finger compensator further comprises a first arithmetical module for multiplying said input symbol signal with a conjugated previous input symbol signal. (In Pajukoski, see fig. 2: 208)

But the combination of Sih, Prysby, and Pajukoski fails to teach a second arithmetical module for multiplying said output symbol signal with a previous output symbol signal.

However, Sendonaris does. (See fig. 4A & equations 19-20) Sendonaris suggests a second arithmetical module for multiplying said output symbol signal with a previous output symbol signal. (See col. 10, lines 30-39)

Therefore, taking the combined teachings of Sih, Prysby, Pajukoski & Sendonaris as a whole, it would have obvious to one of ordinary skill in the art to incorporate this feature as claimed in the system of Sih, as modified by Prysby & Pajukoski, for the benefit of achieving pilot filtering in a Rake receiver.

Claim 24 has been analyzed and rejected w/r to claim 17 above.

Allowable Subject Matter

7. Claims (1, 6-7, 15) are allowed.
8. Claims (18-19, 25-26) are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON FLORES whose telephone number is (571)270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon Flores/
Examiner, Art Unit 2611